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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,673	10/25/2001	Min Gu	V20.12-0001	4520

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Westman Champlin & Kelly  
900 Second Avenue South  
Suite 1600 International Centre  
Minneapolis, MN 55402-3319

EXAMINER
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YAM, STEPHEN K

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/913,673	GU ET AL.	
	Examiner	Art Unit	
	Stephen Yam	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-25, and 46-70 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 2, 4-25 and 46-66 is/are allowed.
- 6) ☒ Claim(s) 67-70 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)     | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

This action is in response to Amendments and remarks filed on November 18, 2003. Claims 1, 2, 4-25, and 46-70 are currently pending.

#### ***Claim Objections***

1. Claim 67 is objected to because of the following informalities:

In Claim 67, line 5, a close-parenthesis symbol should be placed after vinylcarbazole.

In Claim 67, line 6, a semi-colon should be placed at the end of the line.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 67-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rentzepis US Patent No. 5,268,862 in view of Meerholz et al. US Patent No. 5,744,267.

Rentzepis teaches a method of optical data storage comprising providing (see Col. 7, line 66 to Col. 8, line 8) a photorefractive polymeric material having a refractive index, focusing light (see Col. 18, lines 60-63) on the photorefractive polymeric material to cause two-photon excitation (see Col. 8, lines 1-3) of the material at the focal point (see Fig. 2) thereby modulating the refractive index of the material (see Col. 8, lines 5-7) at the focal point to record data (see

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Col. 5, lines 6-7), and illuminating the material with radiation to erase the recorded data (see Col. 12, lines 46-48 and Col. 13, lines 28-39). Regarding Claim 69, Rentzepis also teaches the photorefractive polymeric material including poly (methyl methacrylate) (PMMA) (see Col. 14, lines 45-46). Regarding Claims 68 and 70, Rentzepis teaches the step of re-writing data (see Col. 10, lines 11-14) by focusing light on the photorefractive polymeric material after the original recorded data has been erased (see Col. 19, lines 10-13, Col. 12, lines 46-68, and Col. 13, lines 28-39) to cause two-photon excitation (see Col. 8, lines 1-3) of the material at the focal point (see Fig. 2) thereby modulating the refractive index (see Col. 8, lines 5-7) at the focal point. Rentzepis does not teach the photorefractive polymeric material including poly(N-vinylcarbazole) (PVK), or also including 2, 5, dimethyl-4-(p-nitrophenylazo) anisole (DMNPAA); 2, 4, 7-trinitro-9-fluorenone (TNF); and N-ethylcarbazole (ECZ). Meerholz et al. teach a photorefractive polymeric material (see Col. 3, lines 37-41) for writing and erasing optical data (see Col. 3, lines 46-49) comprising PVK (see Col. 5, lines 52-54 and Col. 8, lines 38-45), DMNPAA (see Col. 8, lines 38-45), TNF (see Col. 5, lines 54-56 and Col. 8, lines 38-45), and ECZ (see Col. 7, lines 5-10 and Col. 8, lines 38-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the photorefractive polymeric material composition of Meerholz et al. in the method of Rentzepis, to provide optimal optical storage at or below room temperature conditions, as taught by Meerholz et al. (see Col. 3, lines 55-59).

***Response to Arguments***

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4. Applicant's arguments filed November 18, 2003 have been fully considered but they are not persuasive.

Regarding Applicant's arguments on the combination of Rentzepis with Meerholz, Applicant argues that it is improper to use the material of Meerholz in the device of Rentzepis, as Meerholz teaches using the material for holographic storage (i.e.- using non-focused beams), while Rentzepis teaches using focused beams to manipulate the material. Examiner asserts that Meerholz does teach using focused beams on the material, as seen in Fig. 5 (through lens (45)) and described in Col. 11, lines 4-7), and also teaches the material for writing, erasing, and re-writing data using optical means (see Col. 3, lines 46-49) and altering the refractive index of the material (see Col. 9, lines 22-24), it possesses sufficient similarities to the device of Rentzepis to at least combine the specific composition materials with the device of Rentzepis, as described in the rejection of Claims 67-70.

***Allowable Subject Matter***

5. Claims 1, 2, 4-25, and 46-66 are allowed over the prior art of record.

6. The following is a statement of reasons for the indication of allowable subject matter:

The invention as claimed, specifically in combination with providing a photorefractive polymeric material having a *single* isomeric state and producing a refractive index inhomogeneity resulting from a non-uniform space-charge distribution within the material, is not disclosed or made obvious by the prior art of record.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**THANH X. LUU**  
**PATENT EXAMINER**